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1 111. The method of producing an amplified broadband optical signal
2 having a wavelength between 1530 to 1620 nm according to claim 110, wherein
3 said rare earth doped amplifier is an erbium-doped fiber amplifier.

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1 112. The method of claim 110, wherein the Raman amplifier amplifies and
2 spectrally broadens the first beam and the rare earth doped amplifier amplifies and
3 spectrally broadens the second beam.

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1 113. The method of claim 110, wherein the optical signal has a wavelength
2 between 1430 and 1620 nm.

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1 114. A broadband amplifier, comprising:

2 at least one input fiber;

3 a splitter coupled to the input fiber, the splitter splitting an optical signal
4 into at least a first wavelength and a second wavelength;
5 one or more Raman amplifiers coupled to the splitter;
6 one or more rare-earth doped optical amplifiers coupled to the splitter;
7 a combiner coupled to the Raman amplifier and the rare-earth doped optical
8 amplifier, the combiner combining an optical signal into at least a first wavelength
9 and a second wavelength; and
10 an output fiber coupled to the combiner.

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1 115. The amplifier of claim 114, wherein the splitter directs the first
2 wavelength to the Raman amplifier and the second wavelength to the rare-earth
3 doped optical amplifier.

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1 116. A broadband amplifier, comprising:

2 at least one input fiber;

3 a splitter coupled to the input fiber, the splitter splitting an optical signal
4 into at least a first wavelength and a second wavelength;
5 a first ~~amplifier~~ coupled to the splitter;
6 a second amplifier coupled to the splitter, wherein a zero dispersion
7 wavelength of the first amplifier is longer than a zero dispersion wavelength of the
8 second amplifier;

9 a combiner coupled to the first amplifier and the second amplifier, the
10 combiner combining an optical signal into at least a first wavelength and a second
11 wavelength; and

12 an output fiber coupled to the combiner.

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117. A broadband amplifier, comprising:

1 at least one input fiber;

2 a splitter coupled to the input fiber, the splitter splitting an optical signal

3 into at least a first wavelength and a second wavelength;

4 a first amplifier coupled to the splitter;

5 a second amplifier coupled to the splitter, wherein a pump wavelength of the

6 first amplifier is larger than a pump wavelength of the second amplifier;

7 a combiner coupled to the first amplifier and the second amplifier, the

8 combiner combining an optical signal into at least a first wavelength and a second

9 wavelength; and

10 an output fiber coupled to the combiner.

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118. A broadband amplifier, comprising:

1 at least one input fiber

2 a splitter coupled to the input fiber, the splitter splitting an optical signal

3 into at least a first wavelength and a second wavelength;

4 a distributed gain medium coupled to the splitter, the distributed gain

5 medium providing gain through a third order non-linearity;

6 one or more rare-earth doped optical amplifiers coupled to the splitter;

7 a combiner coupled to the distributed gain medium and the rare-earth

8 doped optical amplifier, the combiner combining an optical signal into at least a

9 first wavelength and a second wavelength; and

10 an output fiber coupled to the combiner.

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119. The amplifier of claim 118, wherein the splitter directs the first

2 wavelength to the distributed gain medium and the second wavelength to the rare-

3 earth doped optical amplifier.